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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,516	03/27/2001	Yutaka Nagakura	NEC N00-1101	2816

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EXAMINER

MOORE, KARLA A

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/819,516

Applicant(s)

NAGAKURA, YUTAKA

Examiner

Karla Moore

Art Unit

1763



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/1/03.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-6 and 15-19 is/are allowed.
- 6) ☒ Claim(s) 1 and 7-14 is/are rejected.
- 7) ☒ Claim(s) 20-29 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1203</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 7-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Japanese Patent Publication No. 09-097768 to Ide.
3. Applicant's admitted prior art discloses the invention substantially as claimed in Figures 1-2 and pages 1-4 of the specification. The admitted prior art discloses a gas treatment apparatus comprising: an outer tube (2) having a gas inlet port (11) connected to a gas supply system for receiving the gas and a gas outlet port (10) connected to an exhaust pipe, and defining an inner space; a wafer boat (5) having a circumference provided in the inner space and holding plural wafers spaced from one another in a predetermined direction; an inner tube (3) provided between said wafer boat and said outer tube and elongated in a predetermined direction; and a gas feeder (8) provided between said inner tube and said wafer boat, connected to said gas inlet port and defining a gas passage formed with a plurality of like gas outlet holes (9) equal in open area and equally spaced in said predetermined direction for blowing said gas to said wafers.
4. However, Applicant's admitted prior art fails to teach said gas feeder having a gas passage reduced in cross section from said one end portion toward another end portion.
5. Ide teaches a gas injector with a gradually decreasing cross section for the purpose of providing a uniform gas flow rate in a lengthwise direction (abstract). The gas injector would inherently extend partially around the circumference of a wafer boat.
6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a gas injector/feeder with a gradually decreasing cross section in Applicant's admitted prior art in order to provide a uniform gas flow rate as taught by Ide.

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7. With respect to claim 7, Ide teaches that the disclosed configuration keeps the pressure inside of the gas feeder substantially constant (see abstract).
8. With respect to claims 8-9 and 12, the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. *Ex Parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969).
9. With respect to claim 10, said outer tube serves as an outer shell of a reactor forming part of a system capable of performing CVD.
10. With respect to claim 11, the courts have ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex Parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).
11. Claims 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art in view of Japanese Patent Publication No. 09-097768 to Ide and in view of U.S. Patent No. 5,441,570 to Hwang et al.
12. Applicant's admitted prior art as disclosed in Figures 1-2 and pages 1-4 of the specification. The admitted prior art discloses a gas treatment apparatus comprising: an outer tube (2) having a gas inlet port (11) connected to a gas supply system for receiving the gas and a gas outlet port (10) connected to an exhaust pipe, and defining an inner space; a wafer boat (5) provided in the inner space and holding plural wafers spaced from one another in a predetermined direction; an inner tube (3) provided between said wafer boat and said outer tube and elongated in a predetermined direction; and a gas feeder (8) provided between said inner tube and said wafer boat, connected to said gas inlet port and defining a gas passage formed with a plurality of like gas outlet holes (9) equal in open area and equally spaced in said predetermined direction for blowing said gas to said wafers.
13. However, Applicant's admitted prior art fails to teach said gas feeder having a gas passage reduced in cross section from said one end portion toward another end portion.

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14. Ide teaches a gas injector with a gradually decreasing cross section for the purpose of providing a uniform gas flow rate in a lengthwise direction (abstract).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a gas injector/feeder with a gradually decreasing cross section in Applicant's admitted prior art in order to provide a uniform gas flow rate as taught by Ide.

16. Applicants admitted prior art and Ide disclose the invention substantially as claimed and as described above.

17. However, Applicants admitted prior art and Ide fail to teach the apparatus as an air-tight vessel.

18. Hwang et al. teach supplying and maintaining a vacuum, which necessarily implies the vessel is airtight, in a LPCVD process in order to deposit compound source gases on wafers (column 1, rows 20-24 and column 2, rows 25-31).

19. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an air-tight vessel in Applicants admitted prior art and Ide in order to deposit compound source gases on wafer using an LPCVD process as taught by Hwang.

20. With respect to claim 14, Ide teaches that the disclosed configuration keeps the pressure inside of the gas feeder substantially constant (see abstract).

Response to Arguments

21. Applicant's arguments presented in a paper filed 1 December 2003 have been fully considered but they are not persuasive. Applicant has amended claims 1 and 13, to overcome the prior art. However, Examiner does not believe that the newly added limitations are sufficient to distinguish over the art cited in the previous office action and above. The gas feeders disclosed in Applicant's admitted prior art and Ide necessarily have a width/diameter that extends around at least a portion of the wafer boat. Despite the fact that the portion extending around partially around the wafer boat is being minimal, as compared to Applicant's claimed invention, it still exists.

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Allowable Subject Matter

22. Claims 20-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter: The closest piece of prior art, with regards to the teaching of a gas feeder with a plurality of like gas outlet holes in a predetermined direction and with opposing convex and concave surfaces, is U.S. Patent No 5,618,349 to Yuuki. **However, Yuuki fails to teach or fairly suggest the gas feeder comprising semi-cylindrical side surfaces** as recited in the above-mentioned claims. Applicant has disclosed that a gas feeder with the combination of the convex and concave surfaces along with the semi-cylindrical side surfaces and a reduced cross section (as claimed) allows for the advantage of uniformly supplying a processing gas.

24. Claims 2-6 and 15-19 are allowed.

25. The following is an examiner's statement of reasons for allowance: Claims 2-6 and 15-19 contain the same limitations mentioned above with respect to claims 20-29 and thus are allowable for the same reason(s).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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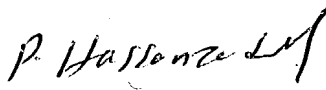
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karla Moore whose telephone number is 571.272.1440. The examiner can normally be reached on Monday-Friday, 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571.272.1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

km
10 February 2004


Parviz Hassanzadeh
Primary Examiner
Art Unit 1763